PHALLUS ATROVOLVATUS, A NEW SPECIES FROM COSTA RICA

by

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Summary. F.D. CALONGE, KREISEL H; & M. MATA (2005). *Phallus atrovolvatus*, a new species from Costa Rica. *Bol. Soc. Micol. Madrid* 29: 5-8.
Phallus atrovolvatus is described as a new species from Costa Rica, which belongs to Section *Clautriavia* (Pat.) Kreisel. This taxon is characterized by showing a white indusium, rugulose to merulioid receptaculum (pileus) surface, beige greenish gleba and a black volva. Notes on its taxonomy and ecology are also added.

Key words: *Basidiomycotina, Phallales, Phallus*, taxonomy, ecology, Costa Rica, Central America.

Resumen. F.D. CALONGE, KREISEL H; & M. MATA (2005).*Phallus atrovolvatus*, especie nueva encontrada en Costa Rica. *Bol. Soc. Micol. Madrid* 29: 5-8.
Se propone *Phallus atrovolvatus* como especie nueva, el cual fue colectado en Costa Rica y pertenece a la Sección *Clautriavia* (Pat.) Kreisel. El nuevo taxon se caracteriza por su indusio blanco, receptáculo con superficie rugulosa a merulioide, gleba beige con tonos verdosos y volva negra. Se incluyen notas sobre su taxonomía y ecología.

Palabras clave: *Basidiomycotina, Phallales, Phallus*, taxonomía, ecología, Costa Rica, América Central.

INTRODUCTION

Regarding the taxonomy of *Phallus*, numerous have been the publications on this genus in the world (VENTENAT, 1798; FISCHER, 1888-1905; MÖLLER, 1895; LLOYD, 1909; BOEDIJN, 1932; PILAT, 1958; DRING & RAYNER, 1967; DRING & ROSE, 1976; LIU, 1984; MILLER & MILLER, 1988; ZANG & PETERSEN, 1989; etc.); however most of them appear fragmentary and dispersed, being necessary and urgent the confection of a world monograph. In 1996 KREISEL published a preliminary survey of the genus *Phallus*, but without including any systematic key. As a matter of fact there is a great need to have a work which contains such a tool for all the interested, both amateurs and professionals, on this genus.

One of us (FDC), had the opportunity to spend six months in Costa Rica, looking forward to the study of the *Gasteromycetes* and *Pezizales* of that country. As a consequence of that stay several contributions have been carried out since then (CALONGE & MATA, 2002; CALONGE &

Fig. 1.- *Phallus atrovolvatus*. A colony with several basidiomata where it is possible to observe unopen "eggs", and well-developed basidiomata showing receptacle, indusium, pseudostipe and a black volva. Holotypus.

CARRANZA, 2003; CALONGE & *al*., 2003; CALONGE & *al*., 2005), and we had the chance to collect the material of a rare *Phallus*, which has resulted being a new taxon.

The terminology used here follows that published by CALONGE (1998).

DESCRIPTION

Phallus atrovolvatus Kreisel & Calonge sp. nov. Figs. 1-2.

Etym.: *atrovolvatus*, refers to the black colour of the volva.

Ovum 20-30 mm diametrum, nigrum. Basidioma mature cum pseudostipite cylindraceo, 40-100 x 10-20 mm, album, spongioso. Indusium album. Receptaculo trunco-conico cum apice perforato, 10-20 mm alto et 15-30 mm diametro ad basim, ruguloso-merulioideo. Gleba cremea viridis cum odore suave, non foetido. Volva nigra. Sporae ellipsoideae, 3-5 x 1-1.5 µm, laeves, chlorini-hyalinae. Gregarius ad residuis lignum putridum.

COSTA RICA: Limón, La Amistad Caribe, Cahuita, gregarious on wood chips, among grasses, 12-VII-2001, leg. F. D. Calonge. **Holotypus:** INB3814309-A. **Isotypus:** MA-Fungi 59261.

Unexpanded basidioma globose to ovoid, 20-30 mm diam., black (Fig. 1). Exoperidium membranous, endoperidium gelatinous, hyaline. At maturity a cylindric pseudostipe develops up to 40-100 x 10-20 mm, white, spongy (Figs. 1-2). Receptacle conical-truncate with a rugulose to merulioid surface, perforate apex (Fig. 2), 10-20 mm high and 15-30 mm wide at the base. Indusium expanded to midway between receptacle and volva, with lacerate margin, white to pale yellow (Fig. 2), 30-50 mm long, consisting of a latticed, pseudoparenchymatous pendent membrane (Figs. 1-2) attached to the apex beneath the

receptacle. Gleba beige to yellowish green (Figs. 1-2), without any repellent odour, somewhat sweet, aromatic. Spores ellipsoid, 3-5 x 1-1.5 µm, smooth, hyaline with a weak yellowish tint. Volva black, paler later (Figs. 1-2). It grows gregariously on wood chips and plant debris, among grasses.

DISCUSSION

The effort dedicated to the study of these fungi in different parts of the world, during the last years, have brought the publication of six new species: *Phallus taibeiensis* Liu & Bau (LIU & BAU, 1982), P. *echinovolvatus* (M. Zang, D. R. Zheng & Z. X. Hu) Kreisel (ZANG & *al.*, 1988), P. *yunnanensis* (M. Zang & R. H. Petersen) Kreisel (ZANG & PETERSEN, 1989), *Phallus nanchangensis* Z. Z. He (HE,1989) in China; *Phallus minusculus* Kreisel & Calonge (CALONGE & KREISEL, 2002) in tropical Africa and *Phallus pygmaeus* Baseia (BASEIA & *al.*, 2003) in Brazil.

On the other hand, there have been synonymized other species, such as *P rugulosus* (E. Fisch.) O. Kuntze, *P. novae-hollandiae* Corda, *P. canariensis* Mont. All three under *P rubicundus* (Bosc) Fr. Another group: *P. moelleri* Lloyd, *P callichrous* (A. Möller) Lloyd have been placed under *P indusiatus* Vent.: Pers. (CUNNINGHAM, 1944).

In other instances the holotypus of several species seems to be missing, such as *P subtilis* (A. Möller) Lloyd, *P. costatus* (Penz.) Lloyd, *P. tenuis* (E. Fisch.) O. Kunze, *P. favosus* (Penz.) E. Fisch., *P. lauterbachii* (Henn.) Kreisel, *P. callichrous* (A. Möller) Lloyd, etc.

Phallus atrovolvatus seems to behave as a rare species, since it has never been found again after its discovery, being close to *P. merulinus* (Berk.) Lloyd, which differs in having a white volva and growth on soil.The re-examination of 29 collections of *Phallus* belonging to the USJ, CR and INB herbaria, trying to find more samples of *P atrovolvatus*, has resulted in 26 collections corresponding to *P indusiatus* and three to *P. duplicatus*.

Fig. 2.- *Phallus atrovolvatus*. Basidiomata showing all the characters described in the previous figure, but with a paler volva in the bed down one Holotypus

Thus, regarding our material the combination of characters such as a well-developed white indusium; receptacle with rugulose to merulioid surface; gleba beige with a sweet, non repellent odour; white pseudostipe; lack of any rose or purple tints on the indusium, and a black volva award to *Phallus atrovolvatus* a unique identity. That is why we propose it as a new species.

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